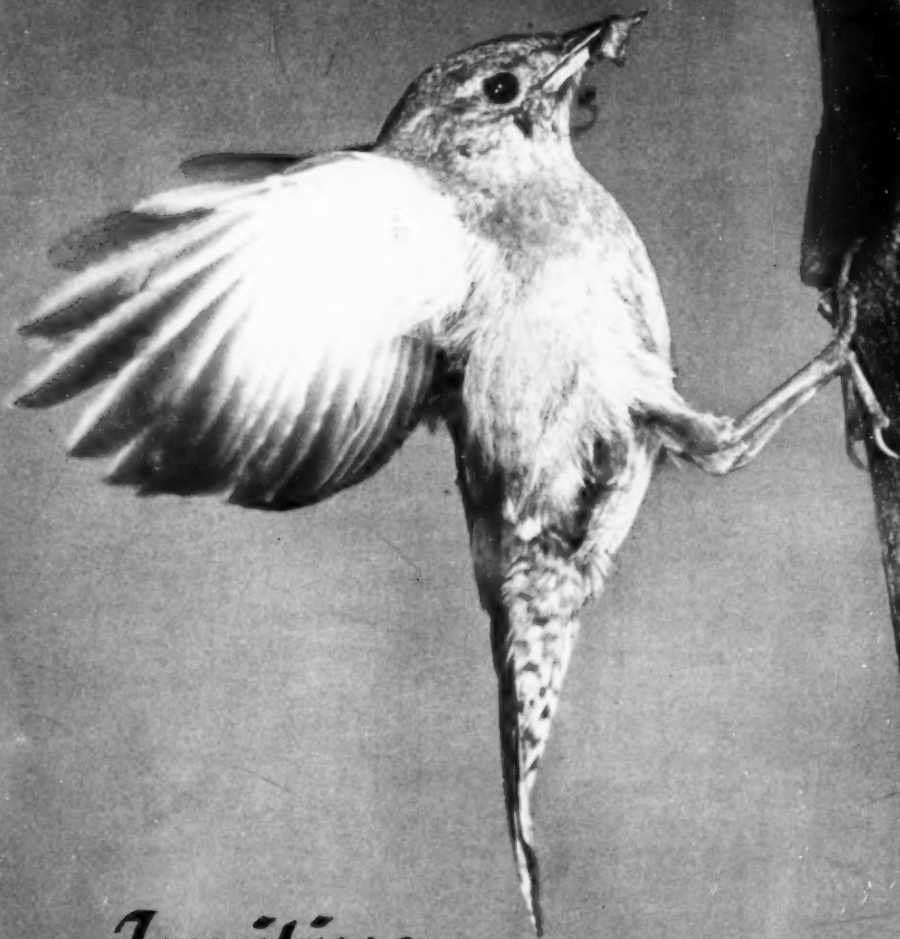


Cornell 4-H Club Bulletin 103



Inviting

BIRD NEIGHBORS

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Inviting Bird Neighbors

By MARY P. SHERWOOD AND EVA L. GORDON

BIRDS are good neighbors. They eat quantities of insects and weed seeds. They have sweet voices to which we like to listen. Most of them are attractive to look at; some are really beautiful. Birds are an unusual form of life; they fly, something which no other warm-blooded creatures can do except bats; they are the only creatures on earth which grow feathers; they have a body temperature from 6 to 8 degrees higher than ours, a temperature which would be a fever high enough to kill us; they build interesting nests and lay beautiful eggs. Their feeding habits and other ways of behaving are well worth watching.

Birds are so timid and so quick-moving that it is almost impossible to get close to a wild bird unless it is sick or has a broken wing. But there are many ways you can tempt wild birds to come close to your homes and to your school yards. You can make them contented enough so they will want to stay around.

The number and kinds of birds in any neighborhood vary with

the season. Some birds are around our homes and schools only part of the year; others stay with us all year. Thus we, in New York State, can hope to have as neighbors only the kinds of birds that are here at any one season. We can't expect to have Wood Thrushes at our feeding trays in January or Snow Buntings in our yards in July.

Birds Through the Year

Spring birds

1. Those that have been with us all year, such as the Chickadees, Nuthatches, and Downy and Hairy Woodpeckers.
2. Birds that migrate south to a warm climate in the winter, then come back to us in the spring to nest, such as Warblers, Thrushes, and Vireos.
3. Birds that just travel through New York State on their way to the far north, where they nest, such as the Northern Horned Larks, Gray-cheeked Thrushes, and the Wilson's Warblers. They, too, have spent the winter in the south, but their nesting grounds are



Photos by Mr. and Mrs. Lane

Mr. and Mrs. Arthur Lane of Ithaca Invite Bird Neighbors

Left. Who invited whom to share a homemade doughnut?

Right. One chickadee considers taking a peanut from Mrs. Lane's lips; another waits its turn.

in Canada. They stay here only a few days, or at most two or three weeks.

Summer birds

1. Those that remain all year.
2. Those that nest here and usually stay all summer, but winter farther south, such as the Orioles, Bobolinks, and Yellow Warblers.

Fall birds

1. Those that stay all year.
2. Those that were here all summer and have not yet left for the south.

3. Those that pass through here on their way south from the far north, such as the Wild Geese, and most of the shore birds.

4. Those that arrive here early from the north and stay for the winter, such as the diving ducks and the Juncos.

Winter birds

1. Those that stay all year.
2. Birds from the far north which spend the winter with us, such as Redpolls, Tree Sparrows, and Snow Buntings.

The "Ornithological Glide," and the Protection Squadron

Birds will not come near buildings if there are too many things to scare them. Remember. Birds are very timid, and can move fast. They fly away for simple causes.

One thing birds do not like is quick movement. Yet all healthy children move quickly. Children are always jumping around like Jack-in-the-boxes. It is nice to have children so active and healthy, but such behavior frightens birds.

What to do? The answer is simple. Train yourself to move with an "ornithological glide" in the areas where you want the birds to nest and feed. *Ornithology* is the scientific word for bird study. Anyone who has watched a Sea Gull glide knows that gliding is a fairly slow, even, quiet movement. Indians could glide

through the woods smoothly and quietly. Since you can't train the birds to like your quick movements and noise, you'll have to train yourself to move with the soundless, smooth glide of an Indian, and to keep your hands quiet or to move them slowly.

To attract birds to your home or school yard, you must follow certain rules. Allow no guns or sling-shots in or near nesting and feeding areas. Allow no throwing of stones or sticks there either. Be sure no one breaks down bushes, trees, and other plants in the area. Perhaps it would be a good lesson to require anyone found disobeying these rules to give the class a talk on bird protection.

Call your bird area a *bird sanctuary* and name it after your school, such as *The Center School Sanctuary*. Or, if you feed birds

*Guests in Season, at the Lane Window Tray—
A White-Throated Sparrow, a Catbird, and a Song Sparrow.*

Photos by Mrs. Edna Lane



at home, declare several feet around the feeding tray a sanctuary, and name it after yourself, such as the *David Bird Sanctuary* or the *Helen Bird Sanctuary*.

At school organize a Bird Sanctuary Protection Squadron. It shall be the duty of every member of the Protection Squadron to report to the others or to your teacher anyone seen doing anything that disturbs the birds in the bird sanctuary, or within 30 to 50 feet of it. It shall be part of the job of the Protection Squadron to arrange to have repaired any signs, trays, cat-guards, bird houses, or other devices that are broken by storm or by vandals.

Types of Nesting and Feeding Places

Some birds, such as Swallows, like to nest in barns and to catch their insect food on the wing. Meadow Larks like to nest in open fields on the ground, and they find most of their insect food in the fields. Phoebe's like to nest under house eaves or porches, and catch the insects around houses. But most birds spend the greater part of their lives in and around trees and shrubs.

Birds find protection in trees, among the branches of shrubs, and in dense tall plants such as cattails and many kinds of weeds. There they can hide from their

enemies, and get some protection from heavy wind and rain. In and around these plants live the insects on which many of these birds feed, and there also grow the fruits and seeds that some birds like.

Where to put feeding trays and bird houses depends on the location of trees or bushes around your home or school. Usually the southern side of a building is best for feeding trays, especially in winter. But if a door of your house or a door where school children file in and out is on the southern side, choose a quieter location.

The best spot, of course, for a bird sanctuary is at an end of the school yard where there are some trees and shrubs. But bushes or trees near a school window will do if they are not in the noisiest part of the playground. If there are no trees or shrubs on the school property and there is a good place for them, perhaps some can be planted. This is not too difficult to have done if you follow the suggestions on pages 19 and 20.

Most trees near homes and schools are too small or the trunks are too sound and healthy to interest hole-nesting birds. Few home yards or school yards have large old trees with holes in them. Bird boxes can help to make up

for this absence of tree holes. Any boy or girl can easily make many simple kinds of boxes. See pages 7 to 14.

Many birds that like to nest in the open will build nests in trees and bushes near homes or schools if no one disturbs them. They will make their own nests of grasses, leaves, twigs, and hair, and will line them with feathers, plant down, and other things.

Do not expect too many birds to nest in one small area. Each family of birds likes to have plenty of "elbow" room. A male Robin, for instance, will drive away any other Robins that want to nest too near; sometimes, however, they will permit a bird of another species, such as a Warbler or a Vireo, to nest nearby. But even if just one or two pairs of birds nest near your school or home, you will have much bird activity to watch and study and get excited about. Once you help nesting birds to feel safe, either the same birds may come back again and again, for many years, or others like them may take their place.

Bird Houses

Spring is the most interesting time of the year to study birds because then they build their nests, lay their eggs and hatch them, and feed their young. Two of the best ways to tempt birds to



Photo by A. A. Allen

Robins Frequently Nest Near Schools or Homes

nest where you can watch them are to put up bird boxes in March or April and to place nesting materials where the birds can find them easily.

Only a few kinds of birds like to nest in boxes. Among them are Flickers, Nuthatches, Chickadees, Wood Ducks, Tree Swallows, Wrens, Bluebirds, and Crested Flycatchers. Some birds, such as the woodland Ovenbird and the Whippoorwill, and the field-inhabiting Bobolinks and Meadowlarks nest on the ground.

Most birds, however, nest above ground, building their nests on, or hanging from,

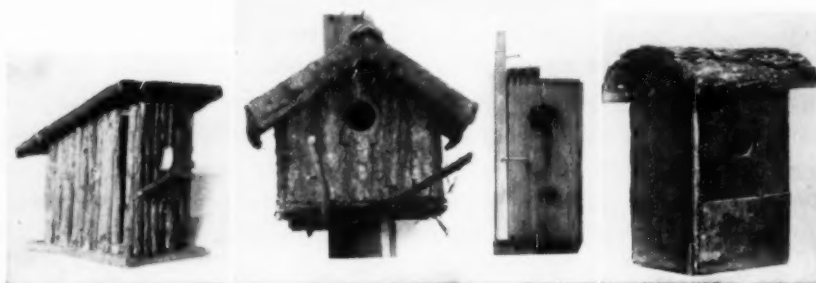
branches of bushes or trees. Such birds are the Warblers, Orioles, Vireos, Hummingbirds, many Thrushes, and many other song birds. Perhaps a feeding tray and short pieces of yarn and string will tempt some of them to nest in the shrubs and trees around your homes and schoolyard. Robins, Phoebe, and Barn Swallows like some shelter. Often, they will accept simple shelves or nest brackets with open sides, such as those shown on page 13. Even a strip of wood only an inch wide will give a toe-hold to a Phoebe, and will interest that bird if the strip is fastened under a projecting roof or some other shelter.

Any youngster who likes to play with nails, a saw, and a hammer can make a bird house. Don't let elaborate plans and drawings scare you; you need such illustrations merely as helpful hints. Build a house any way you want to, by yourself. You can make

bird houses from tin cans, hollowed-out coconuts, small, hollow logs, scrap pieces of wood, heavy roofing paper, composition roof-shingles, or anything that will form weather-tight walls, roof, and floor. The houses do not have to be fancy, or the edges perfectly even. If when you finish your house you can tell by looking at it that rain can get in, tack some tarpaper roofing over the cracks or cover them with composition shingles.

The general idea in building a bird house is to have a roof, floor, walls, and a small "room" inside for the eggs. The tendency is to make the room too large. Good sizes for houses are given in the table on page 14. Most birds want one room only. Martins and House Sparrows are our only birds that use colonial houses with many rooms. It is best to cut the entrance hole above the center. Most birds like to be out of sight when sitting on their eggs

Some Correctly Built Nest Boxes



in the bottom. The one rule in making a bird house is to make the roof, the floor, a wall, or a part of a wall in such a way that you can get into the house to clean it after the nesting season. A pair of ten-cent-store hinges and a hook usually take care of that.

When making a box for a Flicker, choose some rough wood; they like a rough inside for the young to climb on. If you have some slabs with the bark still on, use them for Woodpecker boxes, with the bark on the outside. Put about 1 inch of sawdust or small wood chips in the bottom of the boxes for these birds, because they do not build nests.

When you finish a bird house, you may nail a twig, preferably a forked one, onto the outside just below the entrance for a perch. A small block of wood for a doorstep looks nice but birds like to clamp their toes on something round; a twig is just right for them.

If you want to paint the bird-house as weather protection, choose a subdued color such as gray or brown. The color probably wouldn't make much difference to the bird, although some birds may be sensitive to a conspicuous box. But too gay a bird house does not fit into its sur-



Photo by A. A. Allen

These young Flickers cling easily to the rough bark wall of their rustic house.

roundings. It may tempt young people who are looking for targets and who don't know the story of the bird house. Paint tin-



Photo by A. A. Allen
Bluebirds chose this box of roofing paper, atop a post in the open.



Photo by Mrs. Edna Lane
The Chickadees that occupied this box were well protected by the large metal cat-guard.

can houses to prevent rusting. Put some kind of wooden roof over a tin-can house to reduce the drumming roar of rain, and slant the board so the rain will run off. Don't put a tin-can house in the open sun. Metal absorbs heat and the room inside is small. Such a bird house would become so hot that the baby birds would suffer or even die. Punch two or three holes along the top or sides for air circulation. Place the rain roof a couple of inches above the can, to give extra shade and allow for passage of air.

Don't make too many bird houses, unless your schoolyard is very large or you have many places at home to put them. Perhaps from two to four are all that will be accepted around your school. The male bird of each family sings loudly at nesting time, to announce his home territory. Other birds of the same kind seldom intrude on the home ground of the singing bird. If they do, he chases them away. Birds don't "think" as we do, but they seem to know that too many young birds, for the food supply, must not be raised in a neighborhood. A feeding tray seldom changes this nesting-time behavior. Birds simply won't occupy too many nest boxes in an area. Try to put bird boxes out of sight

of one another, around a corner of a building, or beyond dense trees or bushes.

The most important thing from the bird's point of view is that the nest box be in a safe-looking place. Bluebirds, for instance, like boxes that are set on posts where their enemies have difficulty reaching them. They seem to like best posts that are about 5 feet high, out in an open spot, yet within quick flying distance of shrubs or trees. A cat-guard should be put around such posts. Bluebirds, of course, would not accept a box in the middle of a schoolyard.

For birds such as Chickadees, the nesting box should be from 5 to 20 feet or so above the ground. Nest boxes may be attached to tree trunks but such boxes are not always accepted, for cats and squirrels can reach them too easily. It is best to place boxes for Flickers at least ten feet up, higher if possible, and attach them to or near a dead branch stub.

You may have the discouraging experience of Starlings nesting in the boxes you put up for other birds. If you have a box with an entrance hole $1\frac{1}{2}$ inches in diameter, you can keep it for Wrens or Bluebirds by placing



Photo by A. A. Allen

A chalk box on a porch post was home for these young House Wrens.

over the hole a cardboard with a 1-inch hole. This lets in the early-nesting Wrens but not the Starlings. Bluebirds need the larger hole. Starlings can get into a Bluebird hole but they nest earlier than the Bluebirds. If Wrens have not moved in by the time Bluebirds arrive, and you see the Bluebirds trying to get in, you can remove the cardboard. Refer to the table on page 14 for hole sizes.

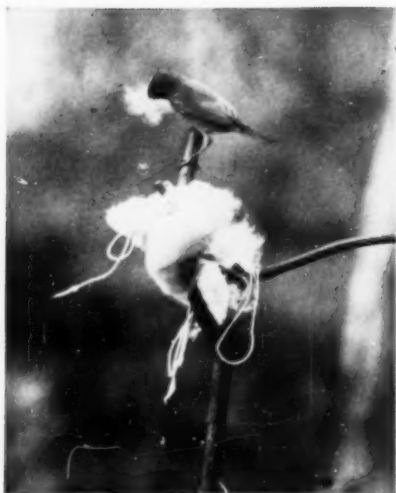


Photo by A. A. Allen

Nonabsorbent cotton, tied to a branch, looked good to this Yellow Warbler in search of nest material.



Photo by A. A. Allen

Many birds, like this Baltimore Oriole, are quick to help themselves to short pieces of yarn or string.

Don't be too disappointed if Starlings take over. They may not be desirable birds because they chase song birds away, but watching their nesting activities and care of their young is as fascinating as watching other birds.

Most of the birds that like to nest in holes or in boxes build regular nests inside on the bottom. You can help them and all the birds that make nests outside of holes by putting out nesting material for them in the spring. Over a low branch, or a piece of rope strung up for the purpose, drape short pieces of thread, yarn, string, narrow strips of cloth, shreds of rope, and fine strips of paper. String, yarn, and such pieces of nesting material should be no more than 10 to 12 inches long so they won't get looped around a bird's neck or feet and hang it. For Yellow Warblers put out clumps of *non-absorbent* cotton and combings of dog hairs. Robins like a supply of mud, as they mix mud with grasses in making their nests. A pan or box of wet mud on the ground near the string and yarn will interest them.

Some Types of Bird Houses

Build houses for particular kinds of birds, such as Wrens, or Bluebirds, or Robins. For measurements refer to the table on page 14.

Number 1 was made from 2 disks of wood and 2 pieces of asphalt composition shingle, one for sides and floor, the other for a roof. The roof may be hooked to the sides.

Number 3 is a gourd with a hole drilled in it.

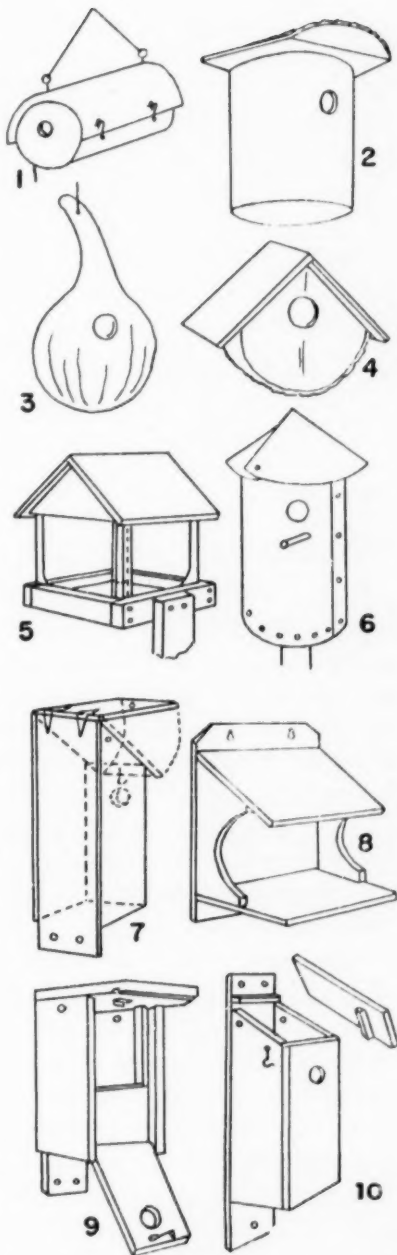
Numbers 5 and 8 have one or more open sides and are suitable for Robins or Phoebe.

Number 6 has a round, wooden floor, and sides and roof of asphaltum roofing paper. The roof is a circle, slit, overlapped, and fastened with split rivets. The piece under the overlap is slit to form a tab which may be bent and fastened to the wall.

Numbers 7, 9, and 10 show ways to make boxes that open for cleaning. Number 7 has a hinged top; number 9, a hinged front held up by a catch; number 10, a removable top.

Numbers 2, 3, 4, and 5 modified from *Bird Houses*, Part IV, *Bird-Study for Schools*, National Audubon Society; numbers 6, 7, 8, 9, 10 from *Homes for Birds*, Conservation Bulletin 14, Fish and Wildlife Service, U. S. Department of Interior.

For some plans, write to the Department of Agricultural Engineering, Cornell University, Ithaca, New York, for *Bird Houses and Nest Shelters* and *Bird Feeders and Baths*.



Measurements for Bird Houses

Bird	Depth of interior	Entrance to floor	Interior diameter	Entrance diameter	Nest to ground
Bluebird.....	8"	6"	4x5"	1½"	8 to 18'
Robin.....	8"	*	6x8"	*	6 to 15'
Chickadee.....	7 to 10"	6 to 9"	3¼x4"	1½"	5 to 15'
White-breasted Nuthatch..	8 to 10"	8 to 10"	3¼x1½"	1¾"	12 to 25'
House Wren.....	6 to 10"	7 to 9"	4x5½"	1½"	6 to 18'
Tree Swallow.....	6 to 10"	8 to 10"	4x5½"	1¾"	8 to 30'
Barn Swallow.....	6"	*	6x6"	*	8 to 12'
Purple Martin.....	6"	6 to 8"	6x7½"	2½"	14 to 60'
Phoebe.....	6"	*	6x6"	*	8 to 12'
Crested Flycatcher.....	8 to 12"	8 to 12"	5½x6½"	2½"	8 to 40'
Red-headed Woodpecker..	12 to 15"	12 to 15"	6x6"	2"	10 to 35'
Hairy Woodpecker.....	12 to 15"	12"	6x6"	1½"	12 to 20'
Downy Woodpecker.....	8 to 10"	8"	4x4"	1¼"	6 to 20'
Flicker.....	12 to 18"	12 to 16"	6½x7½"	2½"	6 to 35'
Screech Owl.....	12 to 15"	9 to 12"	8x10"	3½"	10 to 30'
Barn Owl.....	15 to 18"	4"	10x18"	6"	12 to 18'
Sparrow Hawk.....	12 to 15"	12"	8x8"	3"	10 to 30'
Wood Duck.....	10 to 15"	3"	10x18"	6"	4 to 20'

*One or more sides open.

Feeding Trays — Spring, Summer, Fall

Once the snow has melted in spring, the seed-eating birds can find plenty of food. As soon as the weather is warm enough to bring the insects out, the insect-eating birds do not need much help to find food. But many birds arrive early in the spring when there is not much for them to eat. Often they are caught in late snow or ice storms. So it is a great help to the birds, and often saves the lives of many, if you put up a feeding tray in time for the early arrivals, or continue to feed your bird neighbors until they can take care of themselves.

A tray can be as small as a foot

square or it can be several feet long. You can attach it to a window ledge or to the side of a building by braces. You can hang it from a strong tree branch by rope or chains; or you can fasten it to the top of one or two posts.

Any flat piece of wood or composition board or scraps of wood from discarded store boxes or a cookie sheet will do. If the floor of the tray is made of more than one piece of wood, fasten the pieces close together by nailing cleats underneath. Fill the cracks on top with putty. Nail an edging about 2 inches high around three sides, to keep crumbs and grain from blowing and rolling off. If the tray will be exposed to much

wind, nail a higher board on the windy side. Such a backwall may act as a sail if the tray is hanging. In this case you can use one or two guy ropes to hold the tray in place. The open side of the tray should face south, if possible. Tip the tray slightly toward the open side so rain can run off. Do not enclose the whole tray; birds don't like to be "fenced in" when feeding.

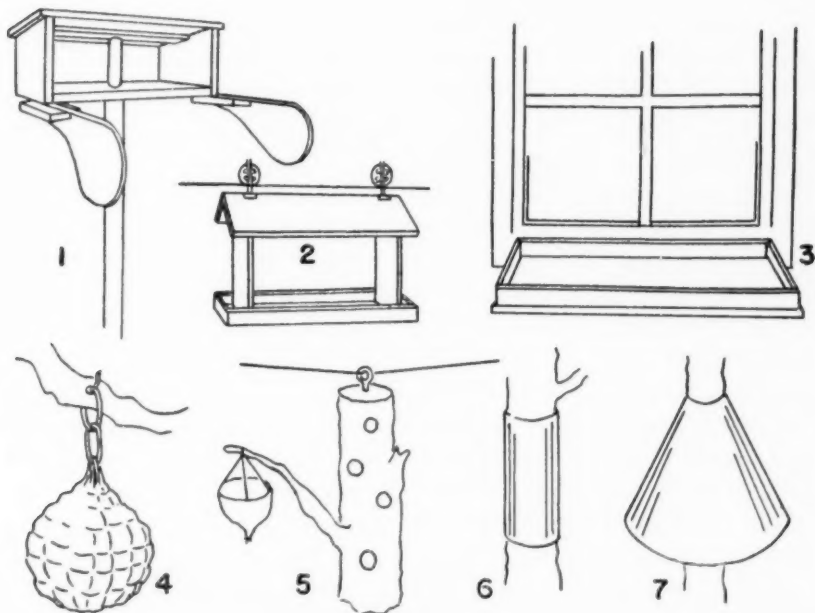
A tray that is fastened to a windowsill has many advantages. It

is sheltered, and the birds that come to it can be easily and comfortably watched from indoors. If anyone inside, however, goes too close to the window, the birds will see the movement and fly away. But if the window is not opened, and the watcher moves back, the birds will soon return.

If you want to set the feeding tray on a post or posts, put metal guards around them to prevent cats from climbing up. Set the feeder at a safe distance from

Feeding Trays and Cat Guards

1, a weather-vane feeder that turns so the inclosed side faces into the wind; 2, a trolley feeder; 3, a window shelf; 4, knitted or crocheted bags, good suet containers; 5, a combination feeder—the coconut shell for seeds, the holes in the log for suet; 6 and 7, metal tree guards should be 6 feet or more above ground, and from 18 inches to 2 feet long, to protect birds from cats and squirrels. These drawings are modified from sources listed on pages 30 to 32.



fences, roofs, branches, or other taking-off-places from which cats can jump.

A tray is safest from cats, and squirrels, if it is hung high from a tree branch or from a roof projection. A hanging tray usually needs one or more guy ropes to keep it from swinging too hard. A tray that hangs high usually needs a pulley so the tray can be let down to be refilled with food. It is as easy to attach a pulley as to put up a clothesline. Fasten the pulley firmly to a tree branch or to some other support. Run the rope from the tray up through the pulley and bring the loose end back to the ground. Tie the loose end around the tree trunk or some other firm object. Use a simple knot or bow so you can untie it to let the tray down. Be sure the rope is long enough so you will not lose the end.

Trays do not need to be fancy. They may be hung or supported by wire or rope. An easy way to attach rope to a tray is to drill a hole in each corner of the tray floor. Push a rope end down through each hole, tie a knot in the rope end, then pull the rope up tight. Bring all four pieces of rope together about 2 feet above the center of the board. Fasten them to each other, and to the rope that goes up to the pulley.

Nail a few twigs to the sides of

the tray for the birds to perch on. If the tray is long, fasten a perch, the length of the tray, about 2 inches above the floor.

You can make small trays of cigar boxes (with one side removed), of split gourds, of half coconut shells, or maybe just a small shelf of wood attached to the side of a building. A feeding stick can be made from a piece of cordwood from 1 to 2 feet long and from 2 to 3 inches in diameter. Bore some round holes in it all the way around and up and down. Attach a rope to one end. Fill the holes with soft suet or peanut butter, and hang the stick where you can see it from your window.

Types of Food for Trays

Foods that are easiest for you to get are cracked grain (chick feed), broken peanuts, Canary seed or millet, sunflower seeds, bread and doughnut crumbs, dog-biscuit crumbs, dry oatmeal, suet, peanut butter, raisins, and an occasional piece of apple. Unfortunately, most of the foods suggested cost money, but on page 28 you will find suggestions on how to earn them.

Birds like a mixture of peanut butter and chopped raisins. This fits well into the holes in the cordwood stick. Or, you may tack a small wooden match box or a



Photo by Mrs. Southgate Hoyt

Hummingbirds Visited this Feeder Regularly

The small glass vial, dipped in red lacquer and dried, contained a mixture of two parts of water to one of sugar.

can cover to a corner of a tray and fill it with this mixture. Insect-eating birds, such as the Woodpeckers and the Chickadees, much prefer suet. You can tie a chunk of suet to a corner of the tray. Many persons put suet in a wire container such as a soap rack and hang or fasten it to a tree or to the side of a building. A woven string container may be better, especially in freezing weather. The common red string bag that onions are sold in is good. Wash it first, to get out as much dye as possible.

Some birds, such as Sparrows and Juncos, prefer to eat on the ground. Scatter bread crumbs and grain for them under the tray or under a nearby "evergreen."

If you are lucky enough to have Pheasants, Grouse, or Quail come to the edges of your sanctuary, clear a spot for them near or under some bushes and scatter grain on it.

Try to invent new ways to present food to birds. Use all sorts of containers. Chop together different kinds of foods, such as acorns mixed with banana and bread crumbs. It is always difficult to get birds to accept new kinds of food, so it is best to stick to foods to which they are accustomed. If you have a garden, plant some sunflowers in a sunny spot. Plant the "seeds" about 1 inch deep. Sunflower "seeds" are a favorite food of many winter birds.



Photo by Mrs. Edna Lane

*Lunch Time for a Nuthatch
Feeding trays can be small and simple like
this one near the Lane's back door.*

Water and Dust Baths — Spring, Summer, and Fall

One thing that will draw birds into your neighborhood is a water bath, especially if your school or home is far from a lake or a brook. Birds need water to drink, especially in warm weather; and they like to take baths.

Perhaps the best water container is an old wooden bowl, especially if you put out water early in the spring when temperatures still go down to freezing. Agate basins are satisfactory, too. Once the weather warms, you can use almost any shallow container. In warm spring and summer, a shallow cake pan or ash-can cover will do. An inexpensive concrete bowl makes a good bird bath.

The water must be shallow, not more than 1 or 2 inches deep. If the water is too deep, the birds just won't use it for a bath. If the bowl or other container is deep, place a layer of gravel in the bottom. Add a large stone which will reach nearly to the surface of the water. The birds like to stand in the water and crouch and flip the water up over themselves, yet be able to hop out instantly.

Appoint a regular crew to keep the bowl clean and to see that there is always water in it. As with the feeding tray, place the bowl where no cats can jump to it. Birds prefer water that is out in the open so they can see all around.

Birds are fond of dust baths. Keep the ground brushed bare under a bush at the edge of the open yard; or, place a large cookie sheet or a long wooden board with inch-high sides at the foot of a bush or tree or even on a post. Sprinkle fine soil about a half inch deep on the dusting space. Change the soil frequently. Part of the reason birds take dust baths is to get rid of feather lice and ticks. These drop into the dust. Nature helps get rid of the lice and ticks when they fall on the ground, but in the tray they might infect each bird that uses the dust.

Shrubs and Trees to Encourage and to Plant

To attract bird neighbors, you need two types of trees and shrubs: (1) those that bear fruits or seeds that birds like to eat, and (2) those that shelter them from wind and storms. If there are not many trees nor much shrubbery in the area to which you want to attract birds, you may wish to plant some there for food and some for shelter. You may need to replace some plants already in the area with others that suit your purpose better.

Planting trees or shrubs is a heavy and difficult job. You will need grown-up help with that chore. Many of the references



Photo by A. A. Allen

The glass side of this feeder protected visitors from winter winds. The guest is a Chickadee.



Photo by A. A. Allen

A Brown Creeper Enjoys a Bit of Suet

A covering of string or screen prevents crows or squirrels from carrying away the whole piece of food.

listed on pages 30 to 32 contain lists of shrubs and trees suitable for attracting birds. You will need advice on which ones will grow best in your sanctuary. Some need more shade, or more sun, than others. Some need acid soil and others do not grow well in it. You will want to know where to put your shelter plants and where the food plants would be most useful to the birds and most satisfying to you. Choose plants and their places wisely. For example, mulberry, elderberry, wild grape, gray dogwood, honeysuckle, and hawthorns attract many birds. The first two are untidy. Wild grapes spread.

Invite someone from your local



Photo by Mrs. Southgate Hoy

*Tree Sparrows Feeding on Seeds Beneath an Arborvitae
"Evergreens" provide shelter for many winter birds.*

Garden Club or tree nursery to talk to you about these things. Show them your sanctuary. Ask for their advice. If you need some planting done, ask them whether they know anyone who will help you with it or who will teach someone how to move shrubs and trees. That someone could be your janitor, a father, a member of a local businessman's club, a senior Boy Scout, or an older 4-H Club boy who might like to do your Sanctuary planting as a special work project.

One way to get trees or shrubs without cost is to transplant suitable native specimens from

local woodlots and fields. Before you, or anyone who is helping you, dig any plant be sure you have written permission from the landowner. Anything that grows on his land is his by law. Show him which plants you want to dig.

The best time of the year to transplant most trees and shrubs is in the spring, before the buds open. But plants can be moved successfully in the fall, too. In the fall you can easily choose shrubs with a heavy crop of fruits. If you plan to wait until the next spring to move your plants, you can tie tags on the heavy fruit bearers in the fall.

Plan Well to Prevent Neglect

In late spring, in summer, and in early fall, birds need little help from us. The woods and fields are then full of insects, fruits, and seeds, so the birds can eat abundantly and never be hungry. At those seasons the feathers of the birds are usually enough protection. Most birds finish their young-raising chores long before the end of summer. A few birds, such as Goldfinches, do nest late, and some birds raise a second set of young. But even for these there is plenty of food.

In late fall, during winter, and in early spring, many birds can use help. During this period, food is harder to find and the weather is often severe enough to

kill them if they can't find shelter and enough food. Feeding trays and shelter boxes are therefore needed most at this time of year. It is best to start feeding the birds early in the fall.

But never start a feeding tray in the fall unless you make plans to keep it stocked with food all winter. Often a feeding tray attracts birds in the fall that would ordinarily go elsewhere for the winter. Birds that visit a tray become dependent upon it. If suddenly, in the middle of winter, you should go away on a vacation, or grow tired of your chore, some of the birds that have learned to come to your tray for food might suffer or even die. Therefore, make sure in the fall,

Mulberry trees are natural summer cafeterias for many kinds of fruit-eating birds. Here a Cedar Waxwing is the patron.

Photo by A. A. Allen



before you put up a feeding tray, that someone will always keep it stocked with food. Talk with your family at home and find who will be willing to put out bird food for you if ever you are away or are sick. If all of your family is to be away for several days, as at Christmas time, arrange with a neighbor to take care of your tray.

At school, set up a Bird Feeding Committee. Arrange it so that everyone in the class may have a turn at putting out food. For school holidays or vacations, assign this task to children who live near the school or arrange with someone else, such as the janitor, a teacher with a car, or a nearby neighbor. The person assigned to this vacation chore should promise to visit the feeding tray at least once a day.

Winter Trays, Food, Baths, and Bird Houses

Put some kind of roof over the winter feeding tray. A wide board hung over it will keep snow out of the food. Slant the board, so snow can slide or melt off. You may have to enclose the tray on one or two sides if wind blows much snow in. But neither roof nor walls need to be fancy or perfect. Hang suet in woven string bags near the tray.

Birds like wild fruits and seeds when they can get them. Gather some berries and seeds in the fall and store them until they are needed. Remember two things: (1) get permission from the landowner to gather these foods and (2) leave more than you take. Birds that feed in the area from which you take these things need to eat, too. While you are collecting, gather a couple of pailfuls of acorns and some hickory nuts for the squirrels. You will find later in the winter that the squirrels will be less troublesome if you have something to give them.

Some kinds of wild seeds or fruits to collect are those of the dogwoods, of honey locust and black locust, of the maple, and of Virginia creeper, ragweed, and skunk cabbage. Acorns are useful, too.

Today someone in your class is sure to have a freezer at home. Perhaps, if there is room and you are neat and careful, you can get permission to store some of your wild fruits in the freezer. Freeze wild grapes, wild raspberries and blackberries, dewberries, elderberries, blueberries, and similar fruits, without sugar, of course. Pack them in small containers, or wrap them in small packages, so you won't have to take out too

much at any one time. Keep a record of how many packages you have, so you can divide them evenly over the winter.

Feed your birds more than just bread crumbs and doughnuts. These two foods are cooked. Birds need the vitamins that are present in raw foods. They aren't used to having any of their food cooked. Try to place the winter tray at a sheltered spot — on the southern side of a building, if possible.

If game birds come to your sanctuary, scatter cracked or whole grain on the ground, and add ragweed "seeds," acorns, skunk-cabbage seeds, or other dry wild fruits and seeds. Game birds need grit in their crops to help grind their food. Keep a patch of ground scraped bare under a bush or near the sanctuary edge. Before the ground freezes, bring indoors two or three pailfuls of coarse sand or fine gravel. Now and then sprinkle a handful or two of this gravel on the bare ground.

Even in winter birds need water to drink. They get water in different ways — they may eat snow or drink from dripping icicles, but a supply of water near the feeding station may be helpful. In cold weather, the water will turn to ice rapidly so it must be changed often. A water com-

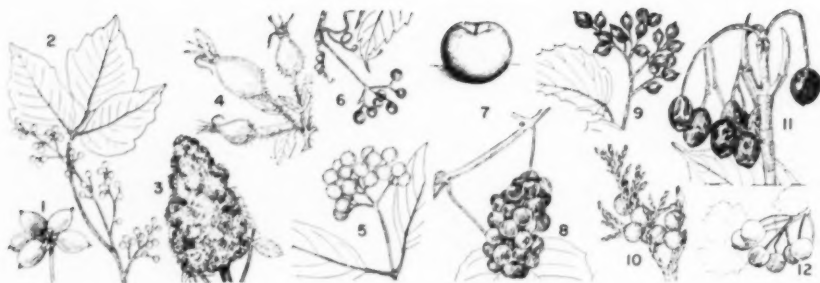


Photo by A. A. Allen

Sun-flowers, too, are self-service feeders for seed-eaters such as this Goldfinch.

mittee can be responsible for this chore. Ice in the bowl should be replaced with water as soon as school starts in the morning, maybe again at recess, at noon, and before you go home at the end of the school day. Putting out warm water doesn't help much. Steam will keep the birds away. Try to place the bowl in a sheltered sunny spot, on the south side of a building.

Birds like dust baths in winter too, so bring some fine soil indoors in the fall before the ground freezes. Make a wooden dust trough, about 3 feet long, of a wide board, or two boards cleated together. Nail an edging an



Some Wild Fruits Birds Like

- | | | |
|--|---------------------|-----------------|
| 1. Flowering dogwood | 4. Wild rose | 8. Wild grape |
| 2. Poison ivy (Let the birds collect this for themselves.) | 5. Panicked dogwood | 9. Arrow wood |
| 3. Staghorn sumac | 6. Woodbine | 10. Red cedar |
| | 7. Apple | 11. Wild raisin |
| | | 12. Thorn apple |

inch or so high around it to keep the soil in. Put it on posts, out of reach of cats. Place it near the feeding tray and water bath, in a sunny spot, preferably where there is southern exposure. Change the soil occasionally. Some birds prefer a ground-level dust trough, or just a clear space on the ground sprinkled with fine dry soil. Either trough or clearing should be in an open spot, so cats and other enemies cannot sneak up on the birds.

At night and in cold or stormy winter weather birds often seek shelter in dense "evergreens" or in shrubby thickets. They may crawl into cavities in tree trunks or under eaves or porches.

Many birds like a sheltering hole in winter. Make six or eight bird boxes, a little larger inside than the nesting boxes. Hang

them in sheltered spots. They do not need to be as far apart as nesting boxes. Birds, or small mammals, will use them for shelter in bad weather.

Perches of twigs should fastened inside so none is directly above another. Boxes made especially for winter shelters usually have a hole about three inches in diameter, near the bottom, not near the top as in nesting boxes. These shelter boxes should be water-tight and as nearly wind-tight as possible.

Nest boxes, left up, may serve also as roosting places.

Studying Birds

The fun of having birds close to your home or school is that you can watch them and see what they are doing. They eat, drink, sleep, work, rest, avoid accidents, keep house, and struggle with the

weather just as we do. But they do all these things in a very different way.

It's more fun if you write down what you see them do. Write it in the class Bird Diary; or write it on the blackboard. Write it in your own Nature Journal. Make a calendar of bird events. Maybe your teacher can schedule a ten-minute talk-over-the-birds session every day.

What birds came to the feeding tray today? Did more than one bird eat at the same time? Did they eat at the tray or carry the food away? Did they fight over the food? Which birds usually eat peacefully? Do the birds come to the tray more often in stormy weather or in clear weather? Which birds eat seeds? Which birds eat suet? Did any game birds come today? Did you see them, or their tracks? Which birds drank water from the bowl? What birds did you see take a dust bath? What time of day do the birds seem to like a dust bath?

Watch through the winter and early spring to see what plants furnish food for winter birds. Look in fields and along roadsides for weed-tops above the snow. Look for those that have bird tracks around them. Some kinds you will find are pigweeds (there are several kinds), common ragweed, lambs quarters, narrow-

leaved plantain, and smartweeds of various kinds.

Notice shrubs, vines, and trees that have fruits that stay on through all or much of the winter.

Make a collection of winter foods that birds find for themselves. Keep a list of the birds you see and what they eat.

Winter is an excellent time to begin to learn birds, you know. There are not so many kinds to study as there are at most other times of the year.

Note the date you first saw birds using any of the nesting boxes or saw birds building a nest in the open. Record the date you see the parent birds first bring food to the newly hatched young. Does just the mother bird feed the young? Or does the father bird help? Can you hear the baby birds call for food? Is the father bird still singing his spring nesting song? Does the mother bird sing?

Can you see the parent birds carrying waste away from the nest? Have you seen owls, hawks, squirrels, or other creatures bothering the nest? Can you tell how many young there are without frightening the parents? They may fly away and leave the eggs or young if you disturb them too much.

Write the date you see the first young bird at the nesting box hole. Make a note of the date you think the last young bird left the nest. After the young are gone, do you still see the parents around? Can you tell whether some of the young are still around?

In watching nesting birds do not go near the nest often. Perhaps it is best for your teacher and the whole class to observe the nest once in two or three days. Do not go too near it. Be quiet. Remember the "ornithological glide." Don't move your hands quickly.

Never, never, collect bird eggs. It is generally against the law. But, do collect pictures of birds and of birds' eggs, and birds' nests. Make a scrap book of pictures if you can get them without destroying anyone's books or magazines. Study pictures in books, in magazines, and on Audubon charts.

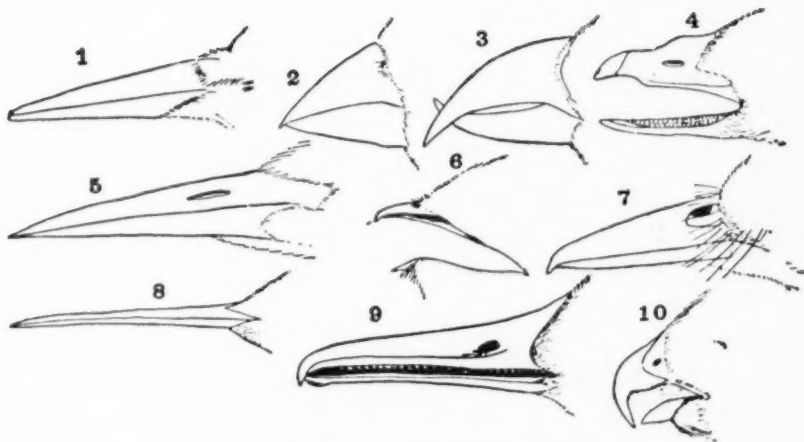
Sometimes dead birds are found on the highways where cars hit them, or in other places where they have met with some accident. Bring such birds to school. Notice the long, strong flight feathers. With your fingers follow those feathers, on the top side, up to their roots. You will discover that the ends of the feathers disappear into the skin and are covered by smaller feath-

ers called *coverts*. Look at the firm tail feathers. Compare the wing and tail feathers with the smaller and softer feathers on the breast and back.

Does the bird have talons? Are all the toes, and the toenails, the same length? Are the legs short or relatively long? Are the toes webbed? Is there a feather crest on the head? Is the tail square, forked, or rounded? What kind of bill does the bird have? Is it narrow and pointed? If so, probably the bird is an insect-eater. Is it short and conical? Then the bird is probably a seed-eater. Is the bill hooked? Then it probably belongs to a hawk or an owl that eats mice and other small mammals.

You can learn much by studying a dead bird, for it is right in your hand. You study dead birds and their skins to learn how birds are made. You study live birds to see how they behave.

Train yourself to write in your Nature Diary only what you see. There are two kinds of writing: (1) fact writing, which teaches us about the world we live in, and (2) story writing, which takes us into the land of make-believe. In writing anything to do with Nature Study we always write facts only. True facts are more precious than gold. A Nature Diary which has made-up stories



Some Interesting Bird Bills

How many of these questions can you work out correctly?

Answers are on page 32

- (a) Which bill belongs to the Hummingbird that reaches deep into the throat of flowers? ()
- (b) Which bill belongs to a Nighthawk that captures insects on the wing in full flight? ()
- (c) Which bill belongs to a Merganser or Shell-drake that catches fish? ()
- (d) Which bill belongs to a Sparrow that eats hard seeds? ()
- (e) Which bill belongs to a Phoebe that captures insects? ()
- (f) Which bill belongs to a Heron that feeds upon frogs? ()
- (g) Which bill belongs to a Woodpecker that digs holes in wood? ()
- (h) Which bill belongs to a Duck that gets food under water and strains out the water? ()
- (i) Which bill belongs to a Hawk that tears its prey of mice? ()
- (j) Which bill belongs to a Crossbill that extracts seeds from the cones of evergreens? ()

in it isn't worth the pencil marks in it.

You never can tell how important your Nature Diary may be someday to you or even to some scientist. Not all of the facts of the world are yet known. You may have helped to discover some of them.

One of the most pleasant and

helpful ways to learn to recognize birds is by listening to the Cornell Bird Song records. It is easy to forget the songs of birds while the birds are south for the winter. You can hear bird songs on records at any time of the day, any season of the year. You can play the songs over and over until you know them by heart.

Did you know that most birds sing at a pitch higher than the highest note on the piano? Some birds, such as the Thrushes, sing in chords; that is, they sing several notes at once. Most birds sing so fast you can't hear all their notes; but you can hear them on the records if you play the records at slower speeds. Most birds have several kinds of notes. Besides songs they have food calls, danger calls, contentment notes, and notes that let their mates know where they are.

Suggested Ways to Pay for Bird Study Needs

Today everything is so costly it is often a problem to get even the simple things we want or need. Peanut butter, sunflower "seeds," nursery trees, and bird-song records cost money.

You youngsters are permitted by law to do many chores as long as you aren't regularly employed. You might be willing to do some of the following things to be able to develop and maintain a bird sanctuary at your home or your school. Rake leaves for your family or neighbors. Mow lawns. Shovel snow. Run errands. Empty garbage cans. Carry in wood. Sweep porches and walks. Hang out laundry. Deliver packages for a bakery in exchange for old

doughnuts. Deliver packages for a hardware store in exchange for grain, pulleys, nails, or sunflower "seeds." Give your grocer some help in exchange for peanut butter, raisins, or dog food.

You should be willing, of course, to do chores at home without being paid for the work. That is part of your training for life. It is your share toward family co-operation. The idea here is for you to find extra things to do, beyond your usual chores, for your family or for neighbors with no children. Explain to your family and neighbors what you want the money for.

Maybe your school can purchase some books about birds or some bird-song records. Your teacher can talk to your principal about that. A club or clubs in your town might be interested enough to sponsor financially your bird sanctuary. Such clubs are Garden Clubs, Woman's Clubs, Businessmen's clubs, the Junior League, and other similar groups.

Your bird sanctuary will be more important to you if you earn much of what you need for it yourselves. But don't let the feeding tray go without food in winter for lack of funds. Ask for help, and advice, and guidance.

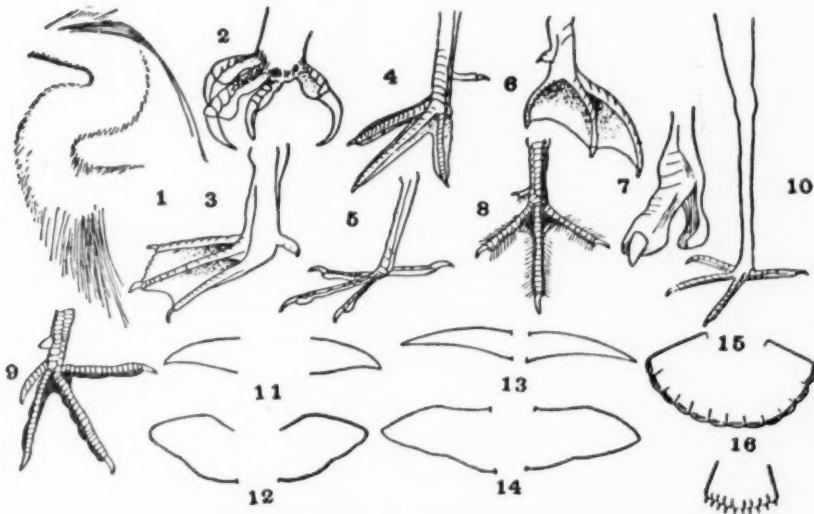
Some Bird Problems to Study

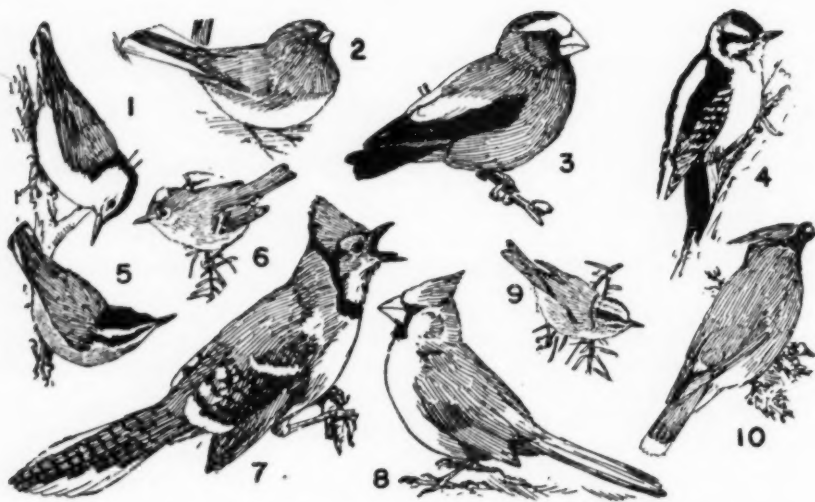
Answers are on page 32

- (a) With which bird's leg shown below would you imagine neck number 1 to belong? ()
- (b) Which of the feet belongs to a loon, an excellent swimmer that walks upon land only with difficulty? ()
- (c) Which foot belongs to a duck that can swim well and can walk upon land fairly easily? ()
- (d) Which of the feet belongs to a phalarope that often travels at the edge of waterways in soft mud? ()
- (e) Which of the feet belongs to a grouse and helps it to walk safely on soft snow? ()
- (f) Which of the feet belongs to a pheasant that scratches for a living? ()
- (g) Which of the feet belongs to a Great Blue Heron that wades in deep waters? ()
- (h) Which of the feet belongs to an Ostrich which is an excellent runner? ()
- (i) Which of the feet belongs to an eagle that holds its prey in its talons? ()
- (j) Which of the feet belongs to a blackbird, a perching bird that does not hold prey in its claws? ()

The four sets of wings are shown in proportionate size. The space between the wings represents the width of the body

- (k) Which wings belong to a hawk that soars with great ease? ()
- (l) Which wings belong to a swallow, an excellent flier, that easily can dodge and dive after insects in the air? ()
- (m) Which wings belong to a penguin that cannot fly? ()
- (n) Which wings belong to a grouse that flies with rapidly beating wings over comparatively short distances? ()
- (o) Which tail belongs to a Chimney Swift that can perch on a chimney? ()
- (p) Which tail belongs to a hawk that sails? ()





These Birds, too, May Visit Feeding Stations and Home Grounds

1. White-breasted Nuthatch
2. Slate-colored Junco
3. Evening Grosbeak
4. Downy Woodpecker
5. Red-breasted Nuthatch

6. Ruby-crowned Kinglet
7. Blue Jay
8. Cardinal
9. Golden-crowned Kinglet
10. Cedar Waxwing

Some Helpful Books and Pamphlets

The A B C of Attracting Birds.

By Alvin M. Peterson. Bruce Publishing Company, Milwaukee, Wisconsin. 1937. 146 pages. Simple, clear suggestions written for grade 5 or 6 and above.

The Audubon Guide to Attracting Birds. Edited by John H. Baker. Blue Ribbon Books, Garden City, New York. 1943. 286 pages. A complete, practical guide.

Beginner's Guide to Attracting Birds. By Leon A. Hausman. G. P. Putnam's Sons, New York

City. 1951. 127 pages. A most helpful book that discusses its subject clearly and in detail. A key to birds most commonly seen at feeding stations is included. The book is easy enough for readers in the upper elementary grades.

Birds in Your Garden. By Margaret McKenny. University of Minnesota Press, Minneapolis, Minnesota. Reprinted 1946. 349 pages. A good book for the school library. It describes birds known to visit gardens and yards, and tells how to at-

tract them, to feed and care for them, and to enjoy them. Chapters on trees, shrubs, and vines to plant are included.

How to Attract the Birds. By Robert S. Lemmon. Doubleday and Company, Garden City, New York. 1948. 119 pages. Chiefly for use in north-eastern United States, this book tells about bird tastes, nesting, eating habits and bathing, and chiefly what to plant, kinds of foods, and nest boxes.

The National Audubon Society, 1130 Fifth Avenue, New York 28, New York, publishes a series of illustrated pamphlets that sell for a few cents each. Among them are: *Bird Houses* (diagrams and plans, directions for placing, and general recommendations); *Song-Bird Sanctuaries* (with tables of trees, shrubs and vines attractive to birds); *Winter Birds as Guests* (4-page folder about winter feeding); *Winter Feeding* (with drawings of bird feeders and lists of bird foods). Write for the Audubon Catalogue.

The United States Department of the Interior and the Department of Agriculture have several useful pamphlets. These are available at small cost from the Superintendent of Documents, Washington 25, D.C. Some of these booklets are:

Attracting Birds, Fish and Wildlife Service, Conservation Bulletin 1, 1947, 16 pages; Homes For Birds, Fish and Wildlife Service, Conservation Bulletin 14, 1942, 24 pages; Publications on Attracting Birds, Fish and Wildlife Service, Wildlife Leaflet 201, 1941, 4 pages.

Various State agencies and private organizations also have helpful publications, some of which are free and others cost small sums. Some of these are listed here. *Attracting Birds, Educational Pamphlet No. 1, furnished free by the Pennsylvania Game Commission, Harrisburg, Pennsylvania, 1950, 8 pages. Attracting Winter Birds to the Garden and Home Grounds.* By Leon Augustus Hausman. Bulletin 553. New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, 1949, 32 pages. *Bird Houses, Baths, and Feeding Shelters: How to Make and Where to Place Them.* By Edmund J. Sawyer. Bulletin No. 1. Cranbrook Institute of Science, Bloomfield Hills, Michigan. *Invitation to Birds.* By Virginia S. Eifert. Story of Illinois, No. 5, Department of Registration and Education, Illinois State Museum, Springfield, Illinois, 1952, 64 pages, free.

Several Cornell Rural School Leaflets of past years, now out of print, will be helpful if they are in your school library. Among them are: *Spring Birds*, March 1921; *Winter Birds*, January 1923; *Shore Birds and Game Birds*, November 1924; *Spring Birds*, March 1929; *Fruits of Woody Plants*, November 1934; *Are They Vermin?*, November 1937; *Homes*, January 1938; *Winter Lunches for Wildlife*, Winter 1950-51.

Plans for bird houses, feeders, and baths may be obtained from the Cornell Department of Agricultural Engineering. (See page 13.) A 2-page mimeographed leaflet on *Feeding Winter Birds* is available from the Rural School Leaflet Office, Cornell University, Ithaca, New York.

Some Books for Bird Study

Many good books are available to help you learn to recognize birds and to know their habits. The following are some that are useful in New York State.

How to Know the Birds, a Simple Aid to Bird Recognition. By Roger Tory Peterson. A Men-

tor Book, The New American Library of World Literature, New York City. 1949. 144 pages.

A Field Guide to the Birds. By Roger Tory Peterson. Houghton Mifflin Company, Boston, Massachusetts. 1947. 290 pages. A well-known guide to field marks of Eastern birds; invaluable for serious bird students.

Birds, A Guide to the Most Familiar American Birds. By Herbert S. Zim and Ira N. Gabrielson. Simon and Schuster, New York City. 1949. 157 pages. A good book for beginners.

Natural History of the Birds of Eastern and Central North America. By E. H. Forbush and J. B. May. Houghton Mifflin Company, Boston, Massachusetts. 1939. 675 pages. An excellent choice for the school library.

Audubon Bird Guide (Land Birds); and *Audubon Water Bird Guide*. Both by Richard H. Pough. Doubleday and Company, Garden City, New York. 1949, 1951. 312, 352 pages. Well-illustrated in color, and helpful.

Answers to questions about bird bills, page 27

(a) 8; (b) 6; (c) 9; (d) 2; (e) 7; (f) 5; (g) 1; (h) 4; (i) 10; (j) 3.

Answers to questions about bird feet and wings, page 29

(a) 10; (b) 6; (c) 3; (d) 4; (e) 8; (f) 9; (g) 10; (h) 7; (i) 2; (j) 5; (k) 14; (l) 13; (m) 11; (n) 12; (o) 16; (p) 15.

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